

# **ABSTRACT OF THE DISCLOSURE**

An a-C:H ISFET device and manufacturing method thereof. The present invention prepares a-C:H as the detection membrane of an ISFET by plasma enhanced low pressure chemical vapor deposition (PE-LPCVD) to obtain an a-C:H ISFET. The present invention also measures the current-voltage curve for different pH and temperatures by a current measuring system. The temperature parameter of the a-C:H ISFET is calculated according to the relationship between the current-voltage curve and temperature. In addition, the drift rates of the a-C:H ISFET for different pH and hysteresis width of the a-C:H ISFET for different pH loops are calculated by a constant voltage/current circuit and a voltage-time recorder to measure the gate voltage of the a-C:H ISFET.